



# I need some answers, now!: Present time perspective is associated with holding conspiracy beliefs

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## ABSTRACT

Because conspiracy theories have many negative consequences, understanding the psychological factors underlying their endorsement is an important task for researchers. We examined whether people's time perspective (TP) – the tendency to focus on the certain aspects of the past, present, or future – is associated with conspiracy beliefs. In two studies we investigated general (Study 1;  $N = 263$ ) and COVID-19 related (Study 2;  $N = 570$ ) conspiracy theories. The most consistent finding was the positive correlation between two present TPs: hedonism and fatalism and the endorsement of conspiracy ideations. Moreover, we found that hostility and a tendency toward irrational thinking mediated these associations. Additionally, but only in Study 2, conspiracy beliefs were associated with higher levels of the Past Negative TP and less balanced TP. We conclude that conspiracy theories provide simple and immediate answers of important events and that is why they are attractive to present oriented people who look for immediate explanations of complex and difficult situations.

Conspiracy theories are typically defined as simple explanations of important events that involve secret actions of powerful and malevolent groups who try to achieve a hidden goal (Douglas et al., 2017). Numerous studies have shown that conspiracy theories can bring about serious social problems like science denial, prejudice, and aggression (Douglas et al., 2019). Thus, understanding the psychological factors that drive the popularity of conspiracy theories, are one of high importance. It has been shown already that the endorsement of conspiracy theories is associated with the feelings of uncertainty, low control, or threat (Douglas et al., 2017). However, characteristics from the realm of individual differences were less investigated in this context. In the current research, we examine whether people's time perspective (TP) – the tendency to focus on certain aspects of the past, present, or future – might shed some light on individual differences in holding conspiracy beliefs. As we argue below, certain TPs might predispose individuals to conspiracy thought.

## 1. Time perspective

Time perspective (TP) has been characterized as a process of

assigning personal experiences to temporal categories (i.e., the past, present, and future), to give order, coherence, and meaning to the world and people's lives (Zimbardo & Boyd, 1999). However, there might be relatively stable individual differences in TP reflecting the tendency to focus on a particular time frame (Zimbardo & Boyd, 1999). In the seminal conceptualization of TP, five dimensions were described, Past Positive, Past Negative, Present Fatalistic, Present Hedonistic and Future, as well as balanced TP (an ideal temporal profile; Zimbardo & Boyd, 1999). The evidence shows that TP dimensions and balanced TP are robust predictors of many psychological and social outcomes (Stolarski et al., 2015, 2020).

Each TP describes different orientations and is linked with different traits and outcomes. Past Positive perspective is defined as a tendency to view the past in a sentimental and nostalgic way, attachment to tradition and acceptance of the past events (Zimbardo & Boyd, 1999) and is associated with more well-being (Shipp et al., 2009), mindfulness (Drake et al., 2008), emotional intelligence (Stolarski et al., 2011), self-esteem (Zimbardo & Boyd, 1999), conscientiousness, and agreeableness (Kairys & Liniauskaitė, 2015) and has been linked to various aspects of religiosity (Łowicki et al., 2018). By contrast, Past Negative perspective

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reflects a negative view of the past and with a negative interpretation of the past events (Zajenkowski et al., 2021) and is associated with a wide spectrum of negative emotionality, including anxiety, depression (Zimbardo & Boyd, 1999), anger, hostility (Zajenkowski et al., 2021), and neuroticism (Kairys & Liniauskaite, 2015). Present Fatalistic TP describes the tendency to view reality as unstable and unpredictable and that luck and fate (i.e., factors beyond one's control) have a strong influence on one's life (Zimbardo & Boyd, 1999) and is associated with feelings of helplessness, depression, anxiety (Zimbardo & Boyd, 1999), frustration, hostility (Stolarski et al., 2016), neuroticism (Kairys & Liniauskaite, 2015), and religious fundamentalism (perhaps to re-establish a sense of control; Lowicki et al., 2018). Present Hedonistic TP reflects a tendency to focus on pleasure, immediate gratification, and a tendency to future-discount (Maercker et al., 2019; Zimbardo & Boyd, 1999) and it is associated with more well-being (Stolarski et al., 2014), mindfulness (Drake et al., 2008), openness, extraversion (Kairys & Liniauskaite, 2015), risk-taking, impulsivity (Jochemczyk et al., 2017; Zimbardo & Boyd, 1999), anger, hostility (Stolarski et al., 2016), and religious fundamentalism, and extrinsic religiosity (Lowicki et al., 2018).

Future TP reflects a tendency for planning, focus on long-distant goals, and striving for achievements (Zimbardo & Boyd, 1999) and is correlated with high self-control and low aggression (Stolarski et al., 2016; Zimbardo & Boyd, 1999) along with high rates of conscientiousness (Kairys & Liniauskaite, 2015). And last, these five individual TPs can be combined—Balanced Time Perspective—to reflect people's ability to adjust their TP in response to situational demands (Zimbardo & Boyd, 1999). Balanced TP predicts greater intelligence and cognitive control (Witowska & Zajenkowski, 2019; Zajenkowski et al., 2016), along with better coping and motional regulation skills (Stolarski et al., 2020).

## 2. Time perspective and conspiratorial beliefs

In the current research, we considered the association between TP and the endorsement of various conspiracy theories. Among the TP dimensions, Present Fatalism seems to have the most in common with conspiracy ideations given that people with fatalistic orientation believe that unknown forces (e.g., hidden motives of powerful groups) decide about life and events (Zimbardo & Boyd, 1999). Moreover, they share several common correlates like perceived powerlessness (Abalakina-Paap et al., 1999; Parsons et al., 1999), lack of control (Kofta et al., 2020; Leiser et al., 2017), uncertainty (Hollander, 2018; Van Prooijen & Jostmann, 2013), religious fundamentalism (Boguszewski et al., 2020; Lowicki et al., 2018), hostility, mistrust (Eckhardt et al., 2004; Sanz et al., 2010), and a reliance on fast, intuitive judgments (Jastrzębski & Chuderski, 2017; Swami et al., 2011). Taken together, we propose that frequently experienced uncertainty, lack of control, and helplessness predisposes fatalists to endorse conspiracy theories. Seeing intentionality (i.e., purposeful actions of hidden forces) in random events, which is an essential feature of a conspiracy-oriented mind (Van Prooijen et al., 2020), may help them restore the feeling of control and bring a relief (Douglas et al., 2017).

The second TP that reflects present orientation – Present Hedonism – might be also linked to conspiracy ideations. Hedonists are impulsive, have difficulties in delaying gratification and focus on immediate rewards (Zimbardo & Boyd, 1999). This leads them to fast, intuitive decisions (e.g., Sekścińska et al., 2018) and make judgments on the spur of the moment and often following their “heart rather than head” (Zimbardo & Boyd, 1999). At first glance, conspiracy theories seem to be “reasonable” explanations of the facts and do not require deeper cognitive processing. Indeed, automatic, intuitive and less rational cognitive style enhances beliefs in conspiracy theories (Swami & Barron, 2021). Thus, conspiracy theories may be attractive to hedonists as they offer simple and quick answers to important, sometimes stressful, events.

There is indirect evidence suggesting that Past Negative TP might be positively correlated with conspiratorial beliefs as well. People with a predominantly Past Negative TP display a relatively high level of hostility (Stolarski et al., 2016; Zajenkowski et al., 2021). Hostility is often characterized as a specific cognitive style that involves suspiciousness, mistrust and evaluating others as dishonest (Eckhardt et al., 2004). Such beliefs underlie conspiracy theories (Douglas et al., 2017). It is likely, that the hostile views presented by those with high Past Negative TP will result in more conspiratorial thinking as well.

The characteristic of Balanced TP suggests that at high levels it should prevent people from endorsing conspiracy theories. Specifically, Balanced TP is associated with more intelligence (Zajenkowski et al., 2016), which has been linked to less support of conspiracy ideations (e.g., Swami et al., 2011). People with highly Balanced TP tend to perceive the events more adequately and are less prone to biases (e.g., are more accurate in time estimation) than individuals with less Balanced TP (Witowska et al., 2020). Thus, individuals with Balanced TP might be more critical and less likely to hold irrational views, including conspiracy theories.

## 3. The current research

In the current research we examined the associations between TP and conspiratorial beliefs in general (i.e., Study 1) and in relation to COVID-19 (i.e., Study 2). This distinction may be important because the former are more dispositional, abstract, and cold cognitions whereas the latter may be more salient, hot, and immediate cognitions. In light of the review presented above, we expected that Present Fatalistic TP (H1), Present Hedonistic TP (H2) and Past Negative TP (H3) would be positively associated with conspiracy beliefs. Furthermore, we expected that more Balanced TP will be associated with lower tendency to support conspiracy theories (H4). Additionally, we considered the mediating roles of people's tendencies toward hostility and irrational thinking (Study 1), predicting they might account for the TP – conspiracy link. Dispositional hostility, related to fatalism, hedonism and Past Negative (Stolarski et al., 2016), may result in frequent hostile interpretation of uncertain situations and, in turn, lead to conspiracy ideations. Tendency toward irrational thinking (associated with present orientation), makes people less likely to seek various points of view, taking the beliefs not requiring much cognitive effort. Finally, in Study 2, we measured potential consequences of taking the conspiracy beliefs for compliance with the norms imposed to tackle the COVID-19 pandemic.

## 4. Study 1: general conspiratorial beliefs

In Study 1 we examined the association between TP and tendency toward endorsement of various conspiracy beliefs (Brotherton et al., 2013). Moreover, we examined two potential mediators: irrational thinking and hostility. The former might be a potential mediator in the link between the two present TP – hedonism and fatalism – and conspiracy as both have been associated with fast and intuitive thinking (Zimbardo & Boyd, 1999). Past Negative and both present TPs were also correlated with hostility (Stolarski et al., 2016), which might mediate their association with conspiracy.

### 4.1. Method

#### 4.1.1. Participants and procedure

A sample of 263 participants (131 men, 132 women) of Polish nationality, aged between 18 and 49 ( $M = 23.31$ ,  $SD = 4.97$ ) took part in the study. The study was conducted in a laboratory at the University of [blinded] as a part of a larger project between December 2017 and January 2018. Data with missing responses were excluded and the final sample consisted of 243 participants (122 men, 121 women). All participants were informed about the general aim of the study and their rights to withdraw from the study without any obligation to justify their

decision. After completing the study, participants were rewarded (≈US \$25). The study procedure was approved by the ethics committee of Faculty of Psychology at University of [blind].

4.2. Measures

4.2.1. Time perspective

We used Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) in the Polish adaptation (Kozak & Mażewski, 2007) which is composed of 56 statements capturing *Past Positive* (9 items; e.g., “Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.”), *Past Negative* (10 items; e.g., “I often think of what I should have done differently in my life.”), *Present Hedonistic* (15 items; e.g., “I believe that getting together with one’s friends to party is one of life’s important pleasures.”), *Present Fatalistic* (9 items; e.g., “Fate determines much in my life.”) and *Future* scale (9 items; e.g., “I believe that a person’s day should be planned ahead each morning.”) where participants were asked how true (1 = *very untrue*, 5 = *very true*) each was before averaging the corresponding item to create scores for each. Additionally, we calculated the Deviation from the Balanced TP which is the square root of the sum of squared differences between one’s actual, empirical mean scores on particular scales, and what are considered the optimal points on each (Jankowski et al., 2020). Because the formula provides an index of deviation from optimal TP profile, the higher the score, the less Balanced TP.

4.2.2. Conspiracy beliefs

The 15-item Generic Conspiracist Beliefs scale (Brotherton et al., 2013; Polish version by Siwiak et al., 2019). The scale covers a range of topics such as secret groups controlling global life (e.g., “Certain natural disasters have in fact been the result of secret testing of powerful and advanced technology with unknown capabilities.”). Participants reported how true they thought each statement was (1 = *definitely not true*, 7 = *definitely true*) before averaging them to create an index of generic conspiracy belief.

4.2.3. Irrational thinking

We used a short version of the Actively Open-minded Thinking scale (Svedholm-Häkkinen & Lindeman, 2018) which is composed of 17 items (e.g., “Changing your mind is a sign of weakness”) measuring thinking style (i.e., open-minded vs. irrational). The items were coded in such a way that higher scores represented a larger tendency toward rigid, dogmatic, categorical thinking, as well as the trend for sticking to one’s beliefs even in the face of counterevidence. The items were averaged to create an index of irrational thinking.

4.2.4. Hostility

We captured individual differences in hostility with the hostility subscale from the Aggression Questionnaire (Buss & Perry, 1992; Polish version by Choynowski, 1972). The scale consists of eight items (e.g., “I

am suspicious of overly friendly strangers”) that participants indicate how characteristic each is of them (1 = *extremely uncharacteristic of me*; 5 = *extremely characteristic of me*). The items were averaged to create an index of hostility.

4.3. Results & discussion

Descriptive statistics and correlations of all variables are presented in Table 1. Most important, individual differences in the tendency toward conspiracy beliefs were positively correlated with Present Fatalistic and Present Hedonistic TP (H1 and H2), as expected. However, we did not find associations of Balanced TP and Past Negative with conspiracy beliefs (H3 and H4). Additionally, the tendency toward irrational thinking, hostility, fatalism, and hedonism were all positively correlated.

Given what we revealed, we tested two mediation models with hedonism and fatalism as predictors, conspiracy beliefs as the outcome, and irrational thinking and hostility as mediators. The mediation analyses were conducted using the PROCESS macro for SPSS (Hayes, 2015). In the first model (see Fig. 1), the association between Present Fatalism and conspiracy became nonsignificant upon the inclusion of mediators; the indirect effect of irrational thinking was significant ( $B = 0.11, p < .05, CI. 95\% [0.04, 0.18]$ ), while the indirect effect of hostility was not significant ( $B = 0.04, p > .05, CI. 95\% [-0.01, 0.10]$ ). In the second model (Fig. 2), the association between Present Hedonism and conspiracy became nonsignificant upon the inclusion of mediators; the indirect effect of irrational thinking was significant ( $B = 0.10, p < .05, CI. 95\% [0.04, 0.17]$ ), while the indirect effect of hostility was not significant ( $B = 0.02, p > .05, CI. 95\% [-0.01, 0.06]$ ). Thus, in both cases, there was a full mediation with a significant mediator of the tendency toward irrational thinking.

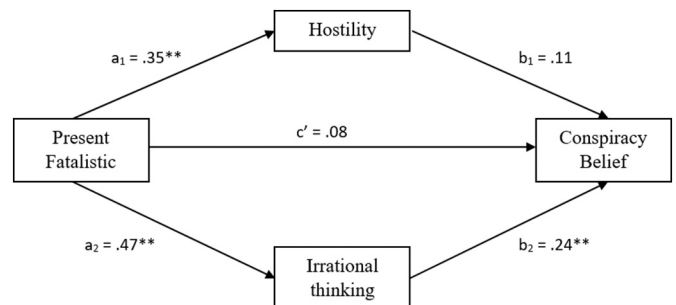


Fig. 1. Model linking Present Fatalism with conspiracy beliefs, hostility, and irrational thinking.

\*  $p < .05$ ; \*\*  $p < .001$ .

Table 1

Descriptive statistics and correlations of all variables from Study 1.

	M	SD	$\alpha$	1	2	3	4	5	6	7	8
1. Past Positive	3.44	0.67	0.70	–							
2. Past Negative	3.11	0.84	0.84	–0.15*							
3. Present Fatalistic	2.49	0.65	0.70	0.20**	0.35**						
4. Present Hedonistic	3.44	0.63	0.83	0.19*	0.11	0.40**					
5. Future	3.40	0.60	0.77	–0.01	–0.01	–0.22**	–0.27**				
6. DBTPr	3.99	0.70	–	–0.51**	0.75**	0.40**	–0.12	–0.33**			
7. Conspiracy Beliefs (GCB)	3.60	1.09	0.87	0.07	0.11	0.24**	0.24**	–0.08	0.07		
8. Irrational Thinking (AOT)	2.30	0.59	0.81	0.12	0.14*	0.47**	0.43**	–0.09	0.10	0.33**	
9. Hostility	2.78	0.80	0.77	–0.01	0.41**	0.36**	0.20*	0.08	0.30**	0.25*	0.35**

Note. DBTP = Deviation from the Balanced Time Perspective.

\*  $p < .05$ .

\*\*  $p < .001$ .

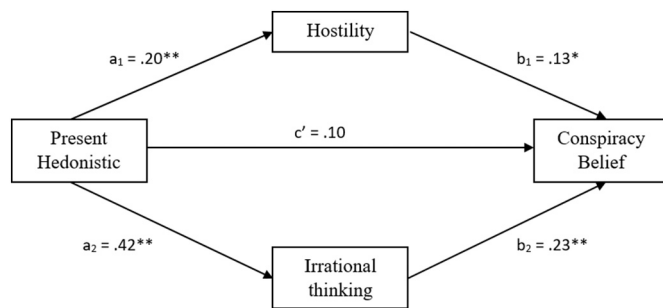


Fig. 2. Model linking Present Hedonism with conspiracy beliefs, hostility, and irrational thinking.

\*  $p < .05$ ; \*\*  $p < .001$ .

## 5. Study 2: COVID-19 conspiracies

The conspiracy theories assessed in Study 1 referred to events that might be distant from people's everyday experience. In Study 2, we tested whether the same effects would emerge with TP and conspiracy beliefs related to the situation of the COVID-19 pandemic, which has a direct impact on people's lives. Additionally, we examined whether these beliefs translate into behavior by measuring declared compliance with restrictions imposed by the government in order to tackle COVID-19 pandemic. Conspiratorial theories seem to play an important role in shaping the pandemic-related behaviors, especially less adherence to the restrictions (e.g. Freeman et al., 2020; Jolley & Douglas, 2014; Kowalski et al., 2020; Swami & Barron, 2021; Venea et al., 2022).

### 5.1. Method

#### 5.1.1. Participants and procedure

The sample consisted of 570 participants (290 females, 280 males), aged 18–60 years (mean age 37.70; standard deviation 11.80) of Polish nationality. Most participants had secondary school education (56.3%); others university (31.4%) or primary school education (12.3%). Participants were registered in the nationally representative online panel ARIADNA and voluntarily participated in this study. Participation in the research was rewarded with points in the ARIADNA panel's loyalty program. The study protocol received approval from the research ethics committee. Data were collected in November 2020.

### 5.2. Measures

#### 5.2.1. Time perspective

The Polish Short Version of the Zimbardo Time Perspective Inventory (PS-ZTPI; Przepiorka et al., 2016) was used to assess time perspective. The PS-ZTPI is a short version of the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999). The PS-ZTPI consists of 20 items with a five-point rating scale (ranging from 1 = *very untrue of me* to 5 = *very true of me*) and measures four scales: Past Negative (e.g. 'It is hard for me to forget unpleasant images of my youth'); Past Positive (e.g. 'On balance, there is much more good to recall than bad in my past'); Future (e.g. 'I am able to resist temptations when I know that there is work to be done'); Present Hedonistic (e.g. 'I often follow my heart more than my head'). Additionally, we included the Present Fatalistic scale from the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999) was used to measure passivity connected to the belief that the future is determined by fate. It includes nine items (e.g., 'Fate determines much in my life') with a five-point Likert-type responding scale (ranging from 1 = 'very untrue of me' to 5 = 'very true of me').

#### 5.2.2. Conspiracy beliefs about COVID-19

We used thirteen ad hoc items to measure COVID-19 related

conspiracy. Three of them concerned theories about global conspiracy (e.g., "The coronavirus pandemic was invented by the media and government to scare the public"), six items described religion-related theories (e.g., "The pandemic is fabricated to distract people from church service") and six concerned vaccine-related theories (e.g., "Vaccines are dangerous to human health, and there is no evidence that they can protect against any disease", "The process of developing vaccines is ethically questionable and should be avoided by a religious person."). Participants were asked how much they agreed (1 = *definitely disagree*; 5 = *definitely agree*) with each item. The items correlated highly with one another (mean  $r = 0.62$ ) and had high internal consistency. An index of belief in conspiracy and irrational theories concerning COVID-19 was created by averaging the items.

#### 5.2.3. Compliance with pandemic restrictions

Rates of compliance with governmental restrictions to reduce the spread of the COVID-19 virus were measured using a single ad hoc item. Participants were asked if they generally complied with governmental COVID-19 pandemic restrictions and specifically if they complied with the recommendations of wearing a mask and social distancing (1 = *never*; 10 = *always*).

### 5.3. Results

Descriptive statistics and correlations are presented in Table 2. We essentially replicated the findings from Study 1 as Present Fatalistic and Present Hedonistic TP were positively correlated with all forms of conspiracy beliefs. Additionally, we found a positive, albeit relatively small, association between conspiracy and Past Negative. Moreover, people with less balanced TP declared higher support for conspiracy theories. Compliance with restrictions was negatively correlated with conspiracy beliefs and hedonism.

As a last step, we analyzed the mediational role of conspiratorial beliefs in the relationship between hedonism and compliance with COVID-19 restrictions (Fig. 3). The analysis revealed that the association between Present Hedonism and compliance became nonsignificant upon the inclusion of mediators, whereas the indirect effect of conspiracy beliefs was significant ( $B = -0.08$ ,  $p < .05$ , CI. 95%  $[-0.11, -0.05]$ ). Thus, conspiracy beliefs about COVID-19 fully mediated the hedonism – compliance association.

## 6. General discussion

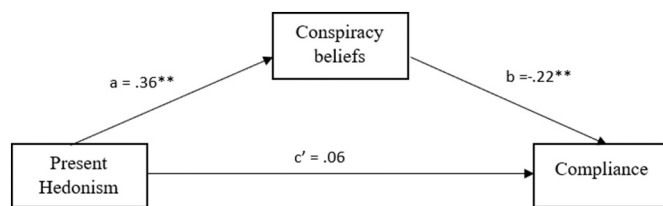
We examined the associations between TP and various conspiracy beliefs. Across two studies, the most consistent finding regarded the positive correlation between conspiracy beliefs and two present TPs – fatalistic and hedonistic, which supported our hypotheses 1 and 2. Thus, present orientations, as detailed in the TP theory (Zimbardo & Boyd, 1999), predispose people to conspiracy thinking. Additionally, we examined potential mediators (Study 1) and consequences (Study 2) of these findings. We considered hostility and the tendency toward irrational thinking as mediating variables, however, in the tested models, only the latter remained a significant mediator of the link between present TPs and conspiracy beliefs. It has been suggested that thinking disposition (or cognitive style) is a relatively stable psychological characteristic that reflects epistemic self-regulation and underlies rationality (Stanovich et al., 2016). The tendency to seek various points of view, challenge one's own beliefs, and reflective reasoning has been labeled as actively open-minded thinking and is regarded most central for rational thinking (Stanovich et al., 2016). We found that those scoring high on fatalism and hedonism display tendency toward irrational thinking (i.e., lower actively open-minded thinking), which in turn predisposes them to endorse conspiracy theories. These results are in line with the findings that both present TPs correlate with fast, intuitive judgments and the tendency to follow their heart rather their head (Zimbardo & Boyd, 1999). While actively open-minded thinking

**Table 2**  
Descriptive statistics and correlations of all variables from Study 2.

	M	SD	$\alpha$	1	2	3	4	5	6	7	8	9
1. Past Positive	3.66	0.68	0.78	–								
2. Past Negative	3.35	0.82	0.86	0.110**								
3. Present Fatalism	3.34	0.74	0.84	0.189**	0.516**							
4. Present Hedonism	3.02	0.75	0.82	0.226**	0.254**	0.462**						
5. Future	3.77	0.64	0.82	0.498**	0.203**	0.054	–0.011					
6. DBTPr	4.05	0.82	–	–0.228**	0.772**	0.725**	0.270**	–0.179**				
7. Conspiracy Glob.	47.80	29.12	0.90	0.046	0.082	0.273**	0.260**	–0.034	0.171**			
8. Conspiracy Rel.	29.35	25.73	0.91	0.027	0.164**	0.432**	0.347**	–0.070	0.301**	0.510**		
9. Conspiracy Total	35.50	23.63	0.91	0.039	0.153**	0.426**	0.359**	–0.065	0.289**	0.781**	0.935**	
10. Compliance	69.40	23.95	–	0.237**	0.080	0.026	–0.136**	0.333**	–0.054	–0.362**	–0.122**	–0.238**

Note. DBTPr = Deviation from the Balanced Time Perspective.

\*\*  $p < .001$ .



**Fig. 3.** Model linking Present Hedonism with compliance and conspiracy beliefs.

requires cognitive effort to assess evidence and consider various viewpoints, present oriented individuals have difficulties to override their initial impulses (Zimbardo & Boyd, 1999). Additionally, they are less motivated to engage in cognitively demanding tasks (Witowska & Zajenkowski, 2019; Zajenkowski et al., 2016). This may predispose them to seek explanations of events that are easily available and do not require cognitive engagement. Indeed, conspiracy thinking correlates with a “motivational stopping” mechanism, known as the need for cognitive closure, which reflects the motivation to reduce ambiguity by forming quick judgments (Kossowska et al., 2018; Marchlewska et al., 2018; Umam et al., 2018).

Although hedonists and fatalists exhibit a similar cognitive style, they might have also distinct characteristics that underpin their conspiracy beliefs. An interesting finding concerned compliance with the COVID-19 restrictions. Specifically, hedonists declared less adherence to governmental norms and conspiracy thought accounted for this effect. In case of fatalism, there was no correlation with compliance. Thus, for fatalists, the primary role of conspiracy theories might be regulation of emotions rather behavior. Specifically, conspiracy ideation may help them to escape an unpleasant state of uncertainty. It has been suggested that the fatalistic feeling that fate determines one's life might indeed help to cope with negative events (Sobol et al., 2021). However, the adaptive value of fatalism is salient in difficult situations which are beyond control (e.g., loss; Guzmán et al., 2005; Falicov, 1998). A question arises to what extent the COVID-19 pandemic might be regarded as such a situation. On the one hand, an individual has little influence on the spread of coronavirus, on the other hand, however, one's action might reduce the possibility of their infection.

In case of hedonism, there might be other factors relevant for conspiracy thinking. Specifically, hedonic oriented people manifests in high levels of Behavioral Activation System (BAS) that is increased approach motivation and the tendency to seek for rewards (e.g., Szymaniak & Zajenkowski, 2021). BAS has been found to positively correlate with important ingredients of conspiracy thinking such as suspiciousness, hostility, blaming others, increased sense of control, and certainty (e.g., Bjornebekk, 2007; Hong & Lee, 2015; Windsor et al., 2008). Moreover, some recent research indicates that conspiratorial beliefs have potential entertainment value as people appraise these narratives as interesting, exciting, and attention-grabbing (Van Prooijen et al., 2022). Thus,

conspiracy ideations are associated with intense emotions which are not exclusively negative. These findings suggest that they might have a rewarding value, especially for people who seek sensations and are more susceptible to boredom (Van Prooijen et al., 2020). All these characteristics might cause conspiracy theories to be attractive to hedonists who seek excitement and immediate rewards (Zimbardo & Boyd, 1999). Future studies may take an in-depth look at the potential role of strong approach motivations for excitement seeking as well as entertaining value of conspiracy theories for hedonistic individuals.

Besides present TPs, we found that endorsement of conspiracy theories was associated with higher Past Negative and less balanced TP. However, this was the case only in Study 2 where we measured beliefs about COVID-19. Although conspiracy theories seem to be universal, not be restricted to specific times or cultures, some specific factors might increase their popularity (Van Prooijen & Douglas, 2018). It has been suggested that conspiracy theories gain momentum during crisis or threatening events such as terrorism, or natural disasters (Van Prooijen & Douglas, 2017). We speculate that the COVID-19 pandemic might be such an event for many people who are afraid of their life and health. In the TP theory, Past Negative as well as the temporal balance are believed to be especially important for emotion (dis)regulation (Stolarski et al., 2014, 2020). Specifically, their high levels are associated with a wide range of negative emotionality including anxiety, depression and hostility (Stolarski et al., 2016; Zimbardo & Boyd, 1999). These tendencies might predispose them toward conspiracy beliefs when they feel especially endangered. Such beliefs, in turn, would help them to handle the threat they experience.

In the current study we found that two present TPs – hedonistic and fatalistic – correlate with conspiracy beliefs. However, there has been some criticism of the TP concept proposed by Zimbardo and Boyd (1999) about present temporal horizon. Whereas hedonists concentrate on immediate pleasure and fatalists on their helplessness, in the TP concept there is no room for more positive, mindful present orientation. Because of this theoretical gap, the concept of carpe diem perspective has been proposed (Sobol-Kwapinska, 2016). It reflects the focus on every present moment, connected with perceiving “here and now” as important and unique time. The carpe diem perspective is positively correlated with life satisfaction, a sense of purpose in life, the perception of time as friendly, positive emotions, and with engaging in life (Sobol-Kwapinska, 2016; Sobol-Kwapinska et al., 2016; Sobol-Kwapinska & Jankowski, 2016). Because carpe diem seems to be more adaptive than the other two present TPs, especially fatalism, it is likely that its correlation with conspiracy beliefs would also differ. Future studies might explore whether carpe diem dimension would predict lower tendency toward conspiracy ideations.

**7. Limitations and conclusions**

Although our research provided some novel findings about conspiracy beliefs and their association with individual differences in temporal

orientations, it was, nonetheless, not free of limitations. First, both studies were correlational. Future investigations might further explore whether the manipulation of temporary state of TP might influence the tendency to endorse conspiracy beliefs. The attempts of inducing TPs had been already made in other areas, for instance, state-TP predicted financial behavior (Sekścińska et al., 2018). Second, we considered only two mediators – hostility and irrational thinking and only in Study 1, while there might be other factors accounting for the link between TP and conspiracy thinking. We already mentioned the potential role of approach motivation or cognitive ability. Third, we used a short version of the TP inventory in Study 2. Thus, the findings related to COVID-19 beliefs need to be replicated using the same measure as in Study 1.

We investigated how people's orientations toward the past, the present, and the future are associated with conspiracy beliefs. We found that orientation on the present, either hedonistic or fatalistic, predispose people to endorse such beliefs. Conspiracy theories seem to provide immediate answers to burning problems, such as social crisis, war, terrorism, disaster or pandemic and the experienced uncertainty.

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## CRediT authorship contribution statement

**Marcin Zajenkowski:** Conceptualization, Formal analysis, Writing – original draft. **Jeremiasz Górniak:** Conceptualization, Methodology, Formal analysis. **Kajetan Wojnarowski:** Conceptualization, Methodology, Formal analysis. **Małgorzata Sobol:** Conceptualization. **Peter K. Jonason:** Conceptualization, Writing – original draft.

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